

Isolation of a Dimer Di-Gallate, a Potent Endothelium-Dependent Vasorelaxing Compound

Abstract

Certain proanthocyanidins found in various wines, grape juice, and other plant extracts exhibit endothelium-dependent vasorelaxing activity that involves increased nitric oxide production by endothelial cells. The smallest procyanidins (PCs) possessing substantial EDR activity were isolated from grape seeds. A dimer di-gallate (epicatechin-galloyl-epicatechin-gallate) was purified from concord grape seed extracts by Toyopearl TSK-40 gel chromatography, HPLC and electrospray FTMS. Further characterization was achieved using tannase treatment and acid thiolysis. This compound had an EC₅₀ for vasorelaxation of $0.67 \pm 0.04 \mu\text{g/ml}$ when tested for endothelium-dependent relaxing activity in phenylephrine pre-contracted rat aortic rings.